



Te Mana Tangata Whakawhanake
MacDiarmid Institute
Advanced Materials & Nanotechnology

Mānawatia a Matariki

We hope you have had a chance to connect with family and friends over the Matariki weekend and that you are managing to stay warm and safe through this winter season. This quarter we celebrate the potential for this country's fast-growing Cleantech sector to become a high-value export earner, showcase more impressive research from our early career researchers, and highlight the release of another 24 of our popular Sci Fi Sci Fact podcast episodes. And we welcome our latest cohort of Discovery Scholarship recipients.

News and Updates



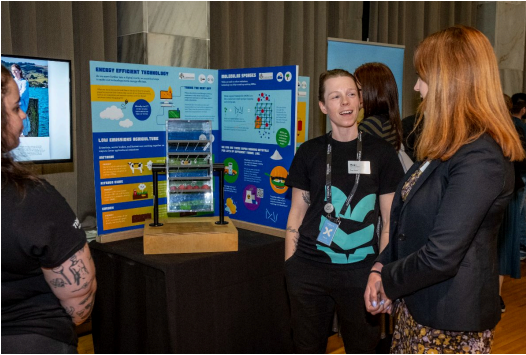
At the launch of the [NZ Cleantech report at our Techweek event in May](#), the Minister of Science, Innovation and Technology Hon Judith Collins (in a pre-recorded a speech) spoke about the "crucial role NZ science can play in transforming our economy, through Cleantech and deep tech commercial solutions."



Hosting the event at Parliament, Minister for Climate Change Hon Simon Watts said that a key priority area in climate strategy is ensuring world-leading climate innovation boosts the economy and that "exploring the potential innovative technologies to help New Zealand respond to climate change is an important part of our climate action."



The report identifies that with a few key changes to policy settings, NZ could be a world leader in the high value Cleantech sector, based on company leaders' opinions that NZ has top class scientific and engineering talent that support IP-rich Cleantech (and deep tech) companies.



MacDiarmid Institute Deputy Director for Commercialisation and Industry Engagement Associate Professor Natalie Plank said that the report showed the critical need for science graduates. "This sector wouldn't exist without deeply skilled science talent."

This sector is showing strong growth globally, with investment into Cleantech globally in 2023 reaching over US\$40 billion. The International Energy Agency projects that global spending on clean energy in their 'net zero pathway' scenario will rise from US\$1.8 trillion in 2023 to US\$4.5 trillion annually by the early 2030s.

Thanks to all our Cleantech Mission partners:

[KiwiNet](#), [Ara Ake](#), [NZ Growth Capital Partners](#), [Tātaki Auckland Unlimited](#), [UniServices](#), [Callaghan Innovation](#)

and event co-sponsors:

[\(KiwiNet, New Zealand Product Accelerator, Te Whai Ao - Dodd-Walls Centre for Photonic and Quantum Technologies, UC Biomolecular Interaction Centre, Paihau-Robinson Research Institute, House of Science NZ, MacDiarmid Institute Emerging Scientists Association \(MESA\), Chiasma The Momentum Programme\)](#)

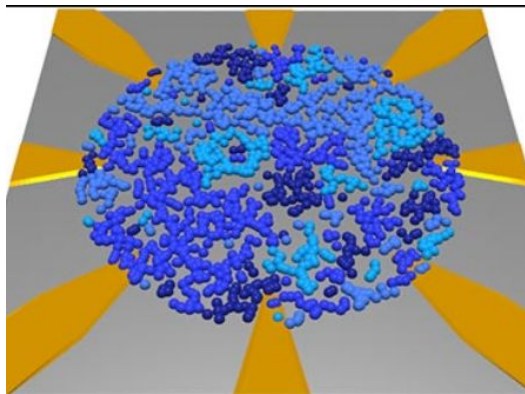
[Matariki values in our research](#)

Deputy Director Māori Associate Professor Pauline Harris discusses how our sustainability focus aligns with the values of Matariki, including the way the Institute comes together to collaborate, share and research to help solve some of the most pressing environmental problems facing the planet today. We share here some of the ways in which [we celebrate the values of Matariki in our research](#).



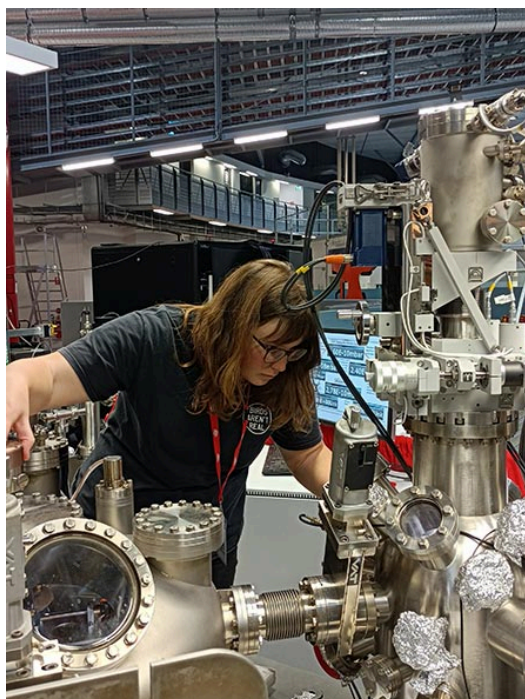
[The future of computing](#)

'Training AI tools like ChatGPT consumes enormous, unsustainable amounts of electricity. So finding alternative computing approaches - ones that can do the same computation with less power - is an absolute must' - Prof [Simon Brown](#)



[Catalysts are stock-in-trade](#)

for the MacDiarmid Institute, including for early career researchers and computational chemists, [Dr Caitlin Casey-Stevens](#) and [Dr Charlie Ruffman](#). New catalysts are paving the way for ammonia to be used for certain types of transport, such as the cargo freighters and tankers that ship goods and commodities all over the world.



PhD student Jaye Barclay is [weaving Mātauranga Māori with contemporary science to create sustainable materials for water purification](#). "The team observed that the structure of harakeke, when viewed under a microscope, closely mirrors that of polymeric membranes often used in water purification. These findings suggest that harakeke leaves might possess properties comparable to these synthetic membranes," says Jaye.



Postdoctoral researcher Dr Ayelen Tayagui is [working to understand the spread of plant diseases to tackle some of Aotearoa's major ecological threats](#).



Check out this [new study in Materials Horizons](#) by alumna Dr Stephanie Lambie, Dr Krista Grace Steenbergen and Professor Nicola Gaston using simulation to challenge long-standing assumptions about the nature of bonding in liquid gallium, and offering a new explanation of why the metal has such low melting point. You can read a [Chemistry World article about the importance of this here](#).



Our 2023 annual report is now available on the website, [as a PDF](#) and also an [HTML version](#).



Associate Pauline Harris wins Murray Geddes Memorial Prize

Our Deputy Director Māori, Associate Professor [Pauline Harris](#) of Rongomaiwahine, Ngāti Kahungunu, and Ngāti Rakaipaka, has been honoured with the prestigious Murray Geddes Memorial Prize by the [Royal Astronomical Society of New Zealand](#). 🏆 This esteemed award recognizes Dr. Harris's exemplary contributions to the field of astronomy. Please join us in celebrating this significant milestone and congratulating Dr. Harris on this well-deserved honour.



Abstracts are now open for [AMN11](#) (closing 16 August)

Topics include Recyclable and reconfigurable materials, Biological materials, Materials for Zero Carbon Systems, Sustainable Resource Use, Materials for Low Energy Tech and Future Computing, Photonics, spectroscopy and

materials characterisation, and Science outside the lab (including challenges and opportunities of commercialising fundamental science). [Submit your abstract here](#).



Celebrating our 2024 Discovery Scholarship recipients

'Physics and its language, Mathematics, have been integral to my life. I look to the stars for guidance, just as my Tipuna once did. I want to unravel its mystery; to gain understanding of the universe and our place in it.' We awarded 18 scholarships this year. Read more about [our 2024 cohort of scholarship recipients here](#).

Four MacDiarmid Institute related researchers have been selected for [KiwiNet's Emerging Innovator Programme in KiwiNet's last two cohorts](#) - September 2023 and February 2024.



Two new Independent Directors appointed to the MacDiarmid Institute Board

Governance Board Chair Hēmi Rolleston welcomed the appointment of two new Independent Directors to the MacDiarmid Institute Board: Marny Reakes and Blanche Morrogh. Blanche Morrogh is the founder and CEO of Kai Ora Honey. Marny Reakes is a Venture Partner with Pacific Channel.

Welcoming the appointments, Hēmi said that he looked forward to the new energy, dynamism and connections that both Blanche and Marny will bring to the Board. "Marny brings substantial deep tech and commercialisation

experience, with over 25 years of operation and business leadership experience working for international mining and resource companies across the globe," he said. "And Blanche brings extensive commercial experience through building her own whānau business Kai Ora Honey in Te Tai Tokerau, as well as a background in product-based R&D.



Meet the 2024 MESA committee!

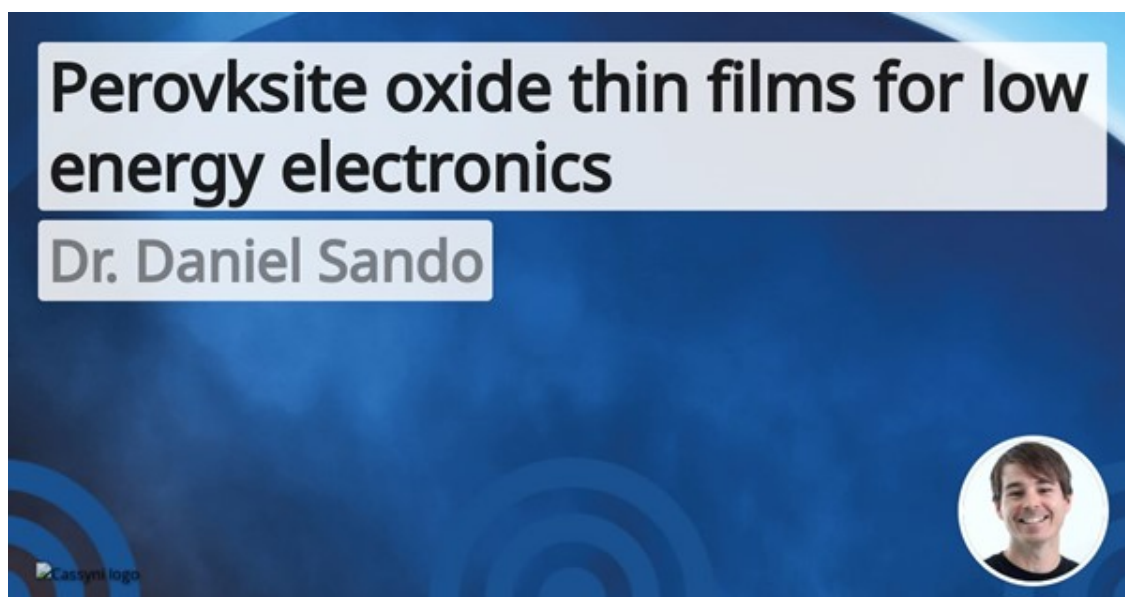
The 2024 MacDiarmid Emerging Scientists Association (MESA) committee is led by its co-chairs, Brooke Matthews and Kieran Demonte, and organises a series of welcome events and workshops around the country, as well as an annual bootcamp. To find out more and meet the committee, [please see our website](#). We are grateful to them for all they do for the Institute's students, postdocs and RAs.



MacDiarmid Institute research seminars

As you may recall, Associate Investigator [Luke Liu](#) organises regular online seminars on a variety of interesting topics, and we would like to invite our

alumni to be included on the seminar mailing list. If Please email MacD-Admin@vuw.ac.nz if you would like to receive invitations to these seminars – they generally take place at 12.15pm on Thursdays. Our next seminar is titled 'Perovksite oxide thin films for low energy electronics' with [Daniel Sando](#) and will take place on 25th July.



Recent Media

Sci Fi Sci Fact is back

Sci Fi Sci Fact is back with [24 new episodes](#). Hear our researchers chat to RNZ's Bryan Crump to try to unravel the science behind popular science fiction. You can find the new episodes on Spotify or wherever you get your podcasts.

Professor Duncan McGillivray looks at whether there's any science behind metal Baakonite, the strong, reinforced metal used for traditional Klingon weaponry such as the bat'leth, in the Star Trek universe, and Dr Krista Steenbergen runs through some of the superheavy elements being created in labs around the world and their resemblance to Tony Stark's fictional new element Badassium.



Scientists comment on the Budget [on The Spinoff](#) and [in this Business Desk article](#).

Media coverage of the NZ Cleantech report:

- <https://www.nbr.co.nz/tech/lack-of-investment-biggest-bugbear-for-nzs-cleantech-companies/>
- <https://www.rnz.co.nz/national/programmes/ninetoon/audio/2018939630/tech-microsoft-s-creepy-recall-feature-ai-summit-in-seoul>
- <https://businessdesk.co.nz/article/opinion/cleantech-undercapitalised-and-overlooked-but-our-biggest-export-opportunity>
- <https://businessdesk.co.nz/article/technology/nz-cleantech-companies-plan-400m-in-capital-raises-by-march-2025>
- <https://www.newshub.co.nz/home/new-zealand/2024/05/fast-growing-kiwi-cleantech-industry-worth-half-a-billion-dollars-says-new-report.html>

And Nicola Gaston wrote a piece [for Newsroom on the value of universities](#).

LinkedIn highlights in brief:

- Alumna and start-up founder [Dr Olivia Ogilvie named on Forbes 30u30 list](#)
- Dr Simon Granville and Associate Professor Jenny Malmström have received Catalyst Seed funding to bring self-assembly, magnetic materials, plasmonics and optics together for new advanced tech.

[Follow us on LinkedIn](#) to hear more about our researcher highlights.

Opportunities

[Azora Biosciences](#) is currently advertising for a Research and Development Technician. This is a Callaghan Institute grant funded position for recent graduate. [See LinkedIn for further details](#). Look out for more of these Career Grant/Experience Grant positions in near future.

That's it from us for now. Thank you for your continued interest in and support for the MacDiarmid Institute and if you know anyone who is interested in signing up to our quarterly email newsletters, [please let us know](#).

Anything to share?

We'd love to celebrate your journey post-graduation. It helps us tell stories and paint pathways for secondary school students and others who are keen to see where science can lead them. If you would like to share with us your story or a recent discovery, achievement, media appearance etc. [Contact us!](#) We'll take care to only share where and how you'd like us to.

There are plenty of opportunities to stay connected with the MacDiarmid Institute whānau, by joining our [LinkedIn Alumni Group](#) in particular. We'd love to continue receiving feedback on this newsletter, and to hear if there's anything else MacDiarmid-related that you'd like to be kept up to date on. Please also forward this newsletter to other alumni you know.

If you are a MacDiarmid alumni and have been forwarded this email by someone else and would like to join our quarterly alumni newsletter mailing list (and also hear of opportunities in between newsletters, e.g. jobs, scholarships and updates on Techweek events etc.), please [contact us](#).



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